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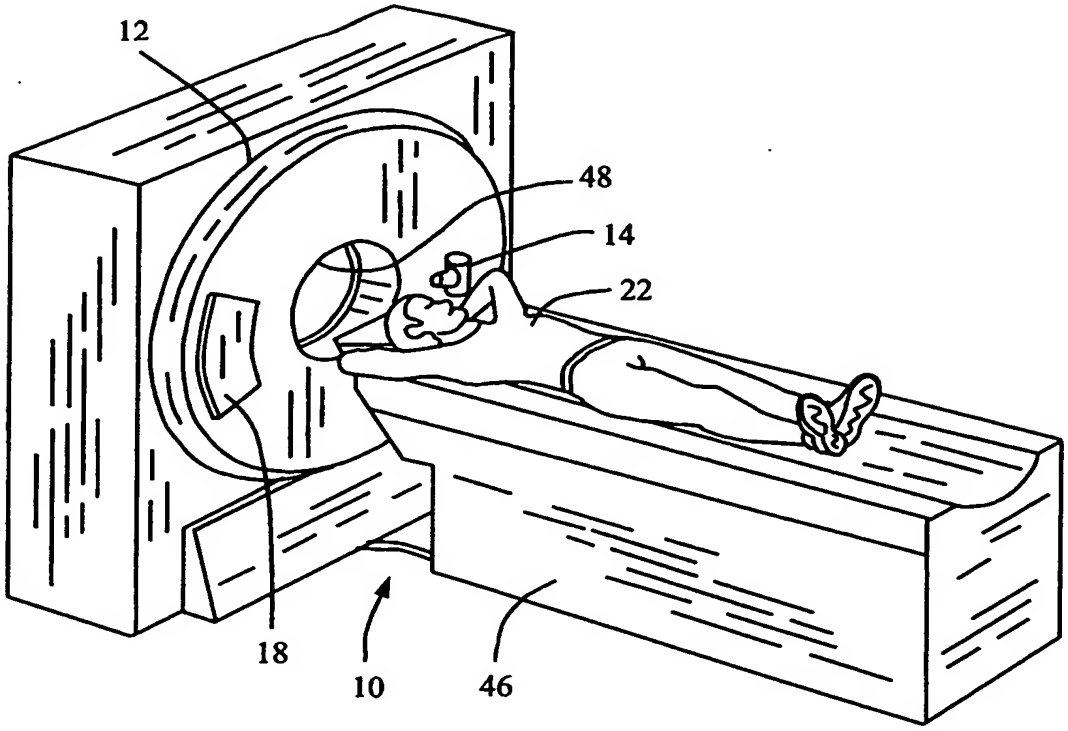
12
48
14
22
18
10
46

FIG. 1

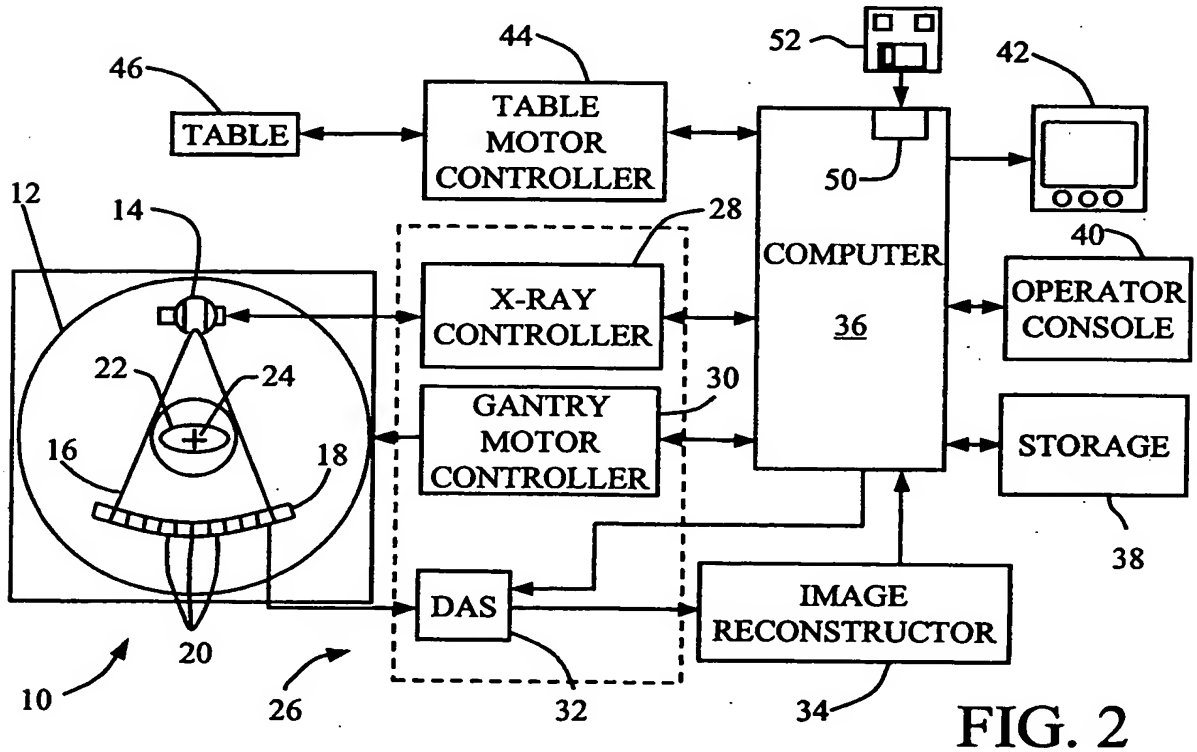
44
52
46
42
TABLE
TABLE MOTOR CONTROLLER
50
12
14
28
40
COMPUTER
36
X-RAY CONTROLLER
OPERATOR CONSOLE
22
24
30
GANTRY MOTOR CONTROLLER
16
18
STORAGE
38
DAS
IMAGE RECONSTRUCTOR
20
10
26
32
34

FIG. 2

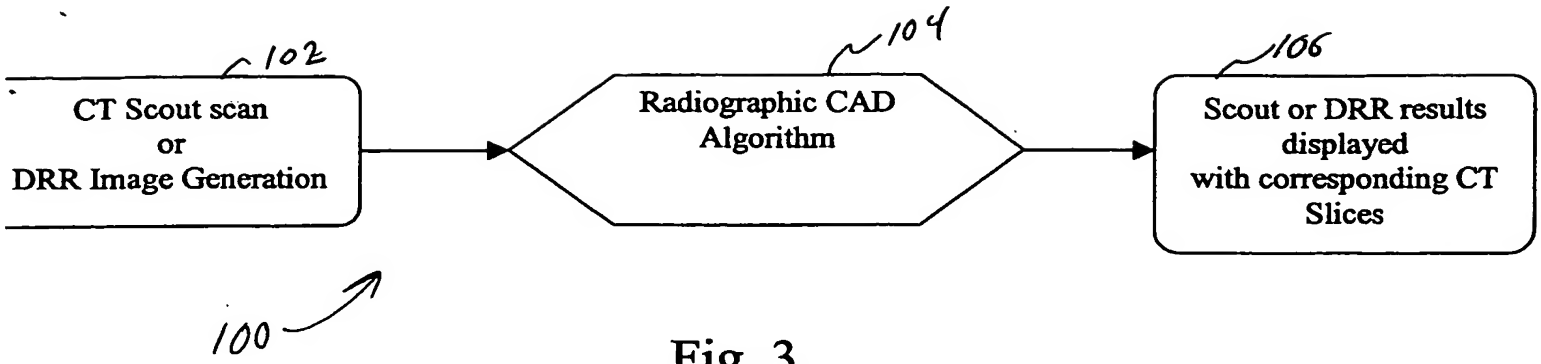
102
CT Scout scan
or
DRR Image Generation
104
Radiographic CAD
Algorithm
106
Scout or DRR results
displayed
with corresponding CT
Slices
100

Fig. 3

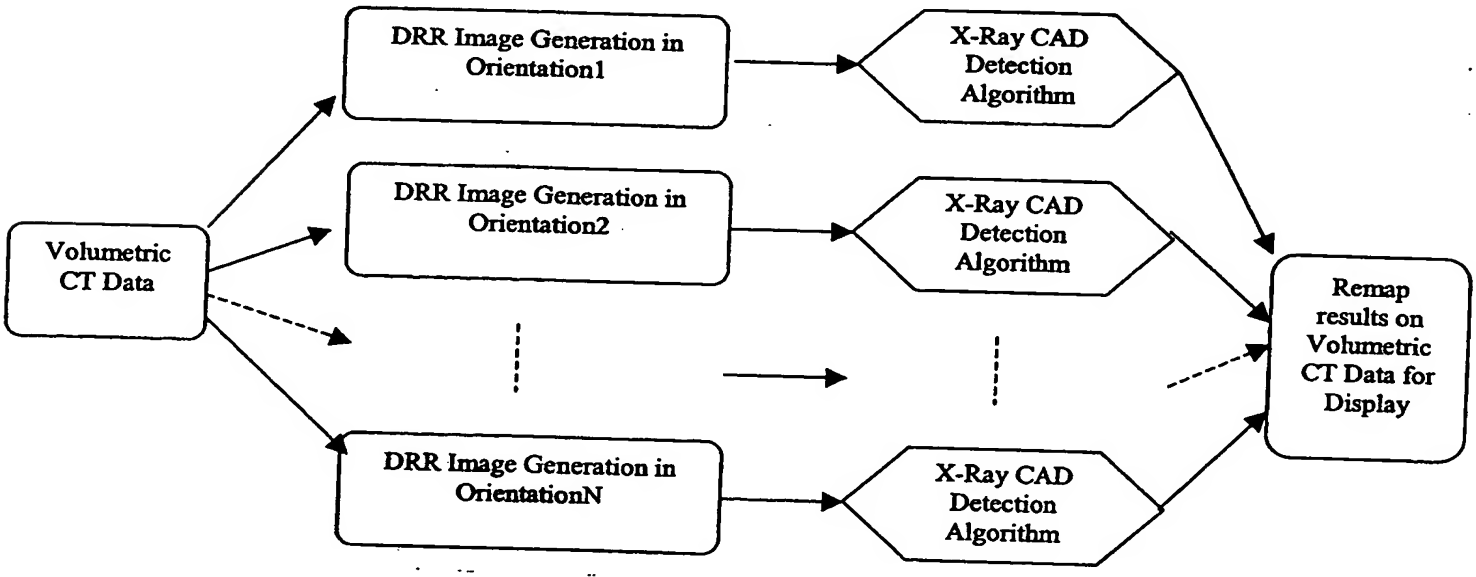
Volumetric
CT Data
DRR Image Generation in
Orientation1
DRR Image Generation in
Orientation2
DRR Image Generation in
OrientationN
X-Ray CAD
Detection
Algorithm
X-Ray CAD
Detection
Algorithm
X-Ray CAD
Detection
Algorithm
Remap
results on
Volumetric
CT Data for
Display

Fig 4

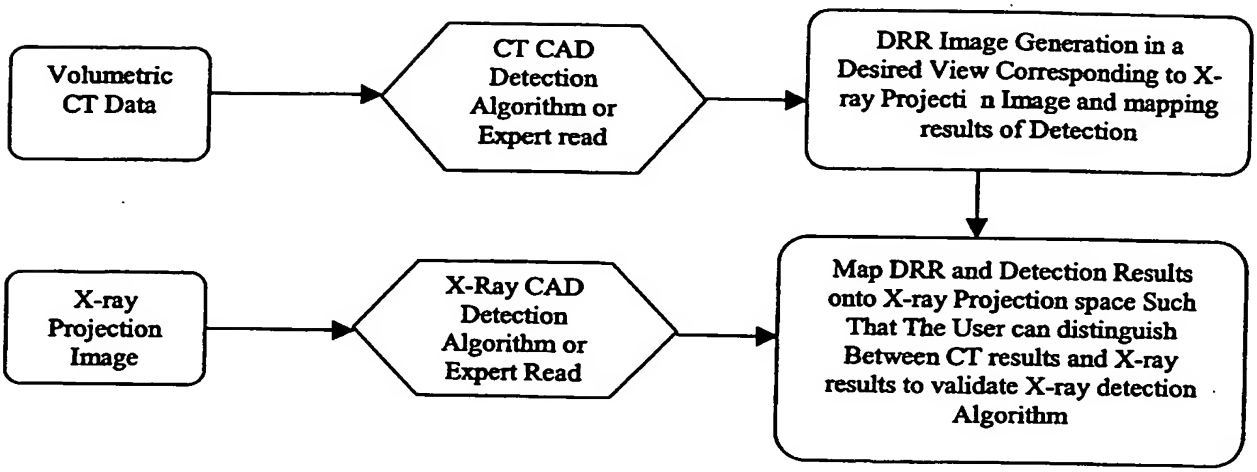
Volumetric CT Data
CT CAD Detection Algorithm or Expert read
DRR Image Generation in a Desired View Corresponding to X-ray Projecti n Image and mapping results of Detection
X-ray Projection Image
X-Ray CAD Detection Algorithm or Expert Read
Map DRR and Detection Results onto X-ray Projection space Such That The User can distinguish Between CT results and X-ray results to validate X-ray detection Algorithm

Fig 5

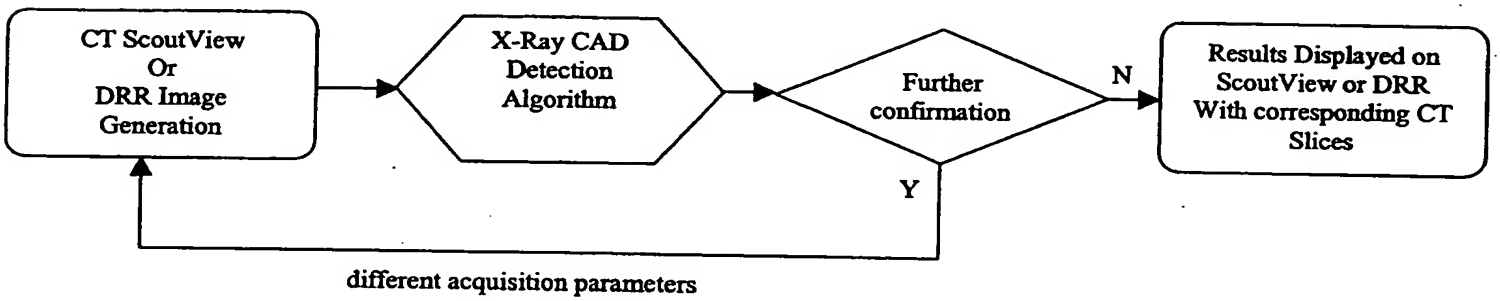
CT ScoutView Or DRR Image Generation
X-Ray CAD Detection Algorithm
Further confirmation
N
Y
Results Displayed on ScoutView or DRR With corresponding CT Slices
different acquisition parameters

Fig. 6

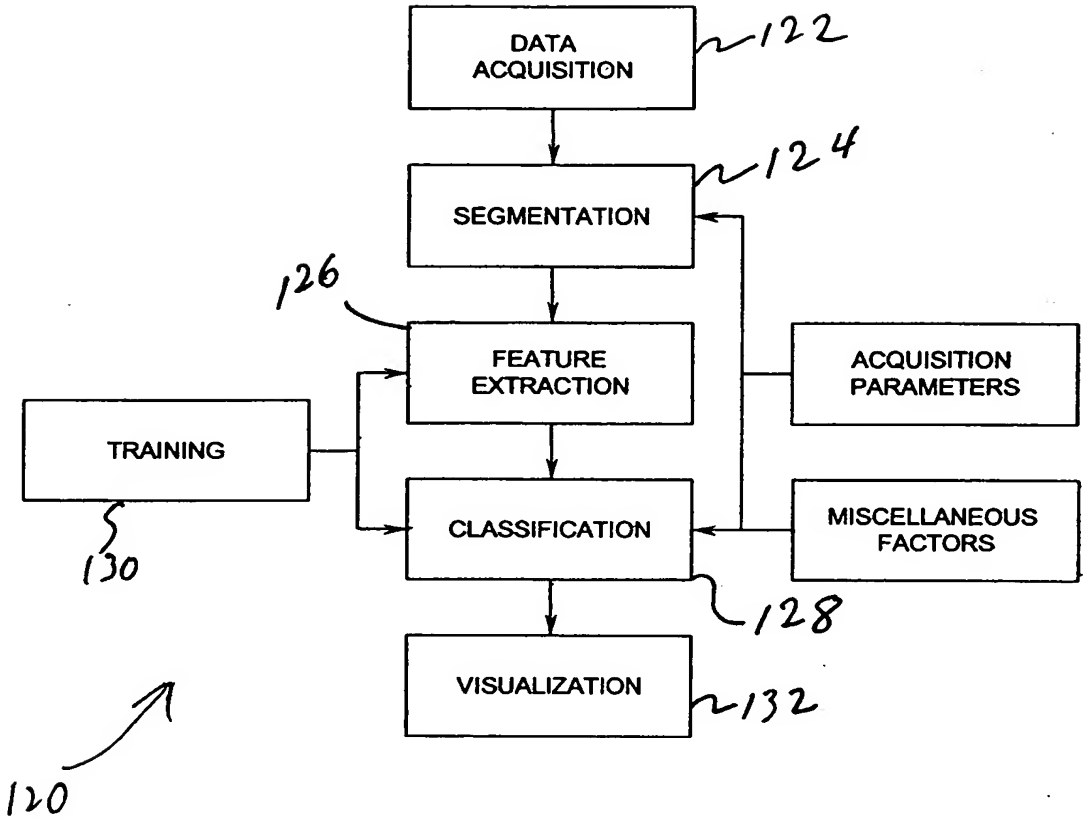

Figure 7. Schematic of CAD process

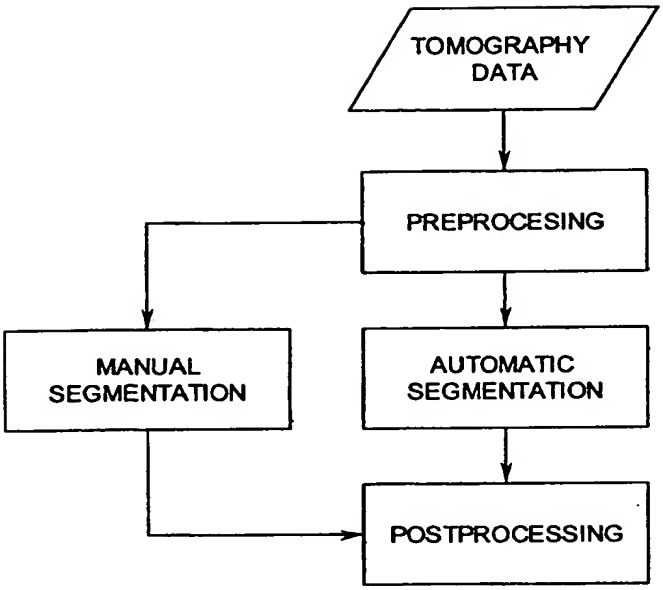

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Figure 8. Segmentation process for data.

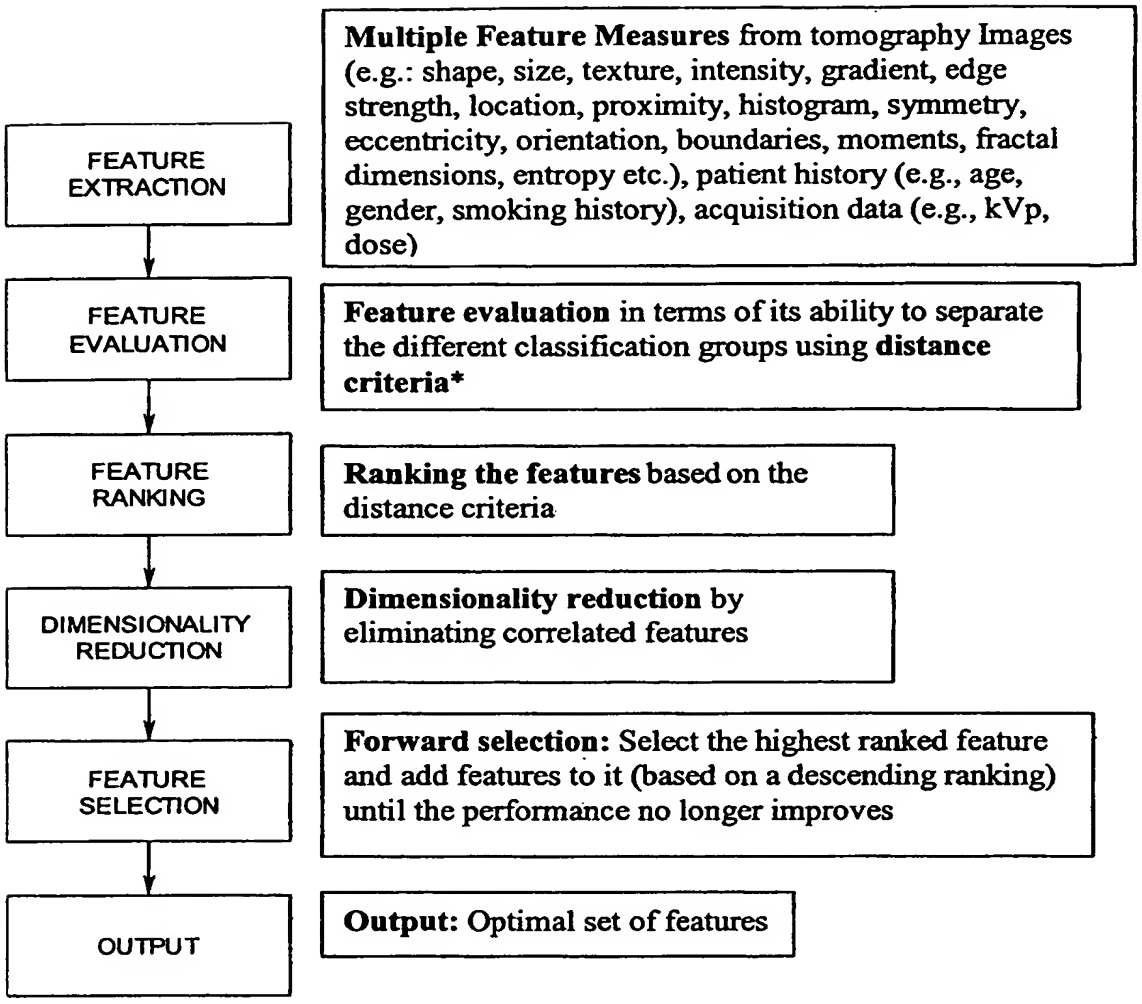

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Figure 9. Feature selection process for data.

* Several different distance criteria can be used: Divergence, Bhattacharya distance, Mahalanobis distance. These techniques are described in standard textbooks including: K. Fukanaga, Introduction to Statistical Pattern Recognition. Academic Press, 2nd ed., 1990.

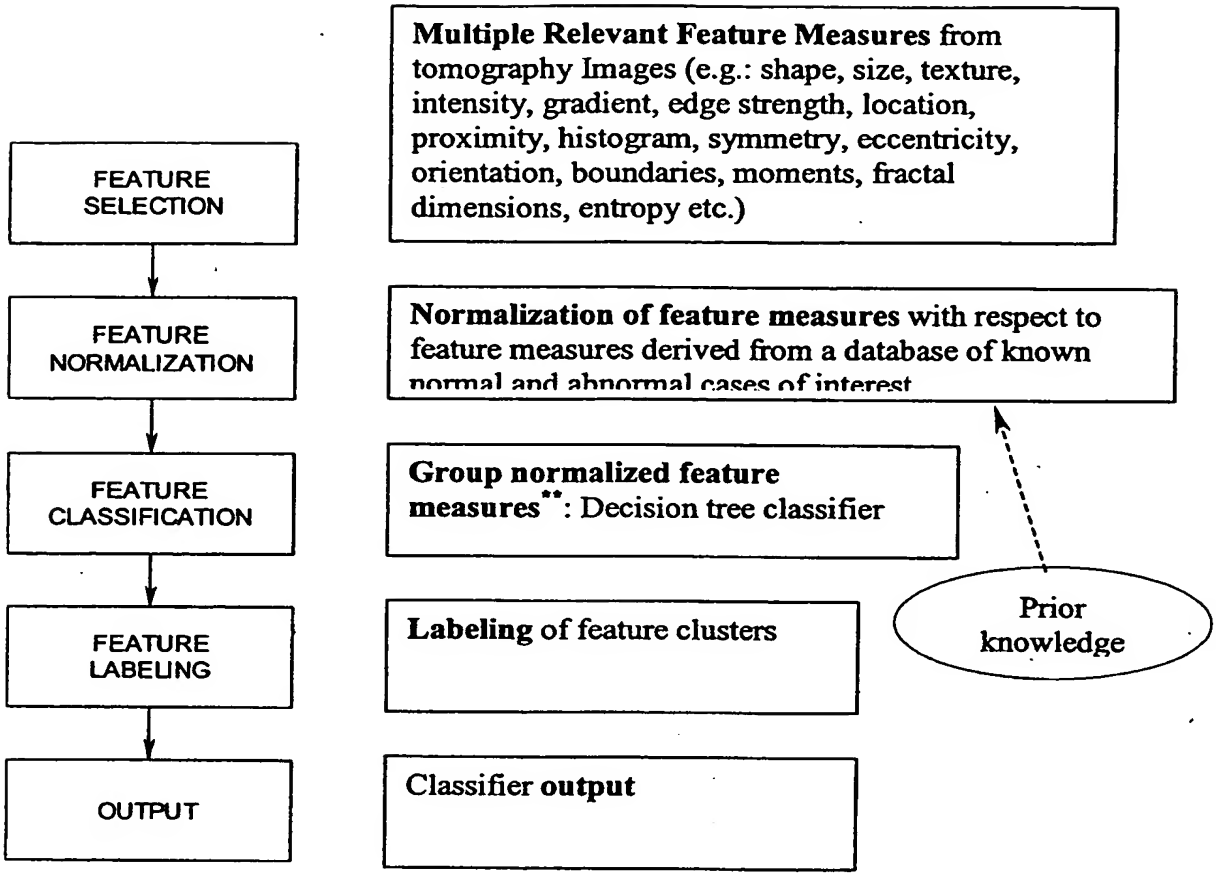

Figure 10. Feature classification process for tomographic data.

** Several different methods can be used: Decision tree analysis, discriminant function analysis, Bayes' minimum-risk method, clustering techniques, similarity measure approach. These techniques are described in standard textbooks including: Fundamentals of digital image processing by Anil K. Jain, Prentice Hall (1988).